densely interwoven branches along the stem, which give the tree a pillar-form appearance." Bouvarel (1954) pictures a less extreme form which he terms "mutant quenouille" (distaff or bed-post).

Twigs from these black spruces have been sent to University of New Hampshire, Yale and the Arnold Arboretum for propagating.

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NOTES ON FESTUCA ARUNDINACEA AND F. PRATENSIS IN THE UNITED STATES

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Current regional and state floras of the United States provide varied treatments of the European grasses, *Festuca pratensis* Huds. (*F. elatior* L. of American authors; see Terrell 1967) and *F. arundinacea* Schreb. For example, the eighth edition of Gray's Manual recognizes simply *F. elatior* sens. lat. Gleason in Britton and Brown's Illustrated Flora recognizes var. *pratensis* (Huds.) Gray and var. *arundinacea* (Schreb.) Wimm. under *F. elatior*. Hitchcock's Manual of Grasses (1951 ed.; rev. by Chase) recog-

nizes *F. elatior* and *F. arundinacea* but treats the latter as of limited distribution in the United States. Other floras employ a great variety of characters of variable worth to separate the two taxa. Generally, there is a scarcity of information in the American floristic literature regarding these European taxa.

The purpose of these notes is to point out the following: (1) recent European (or at least British and Scandinavian) floras consider *F. pratensis* and *F. arundinacea* as separate species, (2) several characteristics are ideally available to distinguish the taxa, (3) *F. arundinacea* probably is much more abundant and generally distributed in the United States and southern Canada than current floras indicate.

Festuca arundinacea is generally hexaploid ($2n=42$); however, its variants or related taxa may have $2n=28$ or 70 (e.g., see Malik 1967). *F. pratensis* is diploid ($2n=14$). Both species are indigenous to Europe and Asia, and the former species occurs also in north Africa. Hybrids between the species are usually sterile (Jenkin 1959).

Hackel (1882) divided European representatives of this complex into two subspecies, i.e., *F. elatior* subsp. *pratensis* and subsp. *arundinacea*, each with three varieties. However, in the present state of our knowledge it seems best to recognize two species, following such works as Hubbard 1954 and Clapham et al. 1962. Obviously, this complex needs to be studied by modern methods in all parts of its native range.

Various literature sources (notably Crowder 1953, 1956, Hubbard 1954, Clapham et al. 1962, and Gillet 1964) were searched for characters to distinguish the taxa. All characters were then tried out on European and American specimens in the U. S. National Herbarium (Smithsonian Institution). The result is the key given below, in which the more significant characters are in italics. Well-collected specimens are necessary; even so, some specimens will be more or less intermediate. Hybrids would be expected to have abnormal anthers or sterile pollen. Illustrations of the lemmas are given by Musil 1963 and Gillet 1964. Huon

(1965) indicated that epidermal characters also are useful in separating the taxa.

KEY TO F. PRATENSIS AND F. ARUNDINACEA:

Lemmas glabrous, glabrate, or scabrous only at apex, awnless or rarely short-awned; spikelets cylindrical to narrow-oblong; rachilla internodes glabrous or nearly so; *shorter branch of each pair of panicle branches bearing only 1-2 spikelets;* panicles 10-35 cm. long; *basal leaf sheaths breaking up and often decaying into irregular dark-brown fibers;* leaf blades usually 2-6 (-8)mm. wide; *auricles glabrous;* plants 30-120 cm. high. .... *Festuca pratensis* Huds.

Lemmas scabrous or short-hispid with minute teeth all over or only on nerves or keels (visible at 10 × or more magnification) or rarely glabrate, short-awned (to 4 mm. long) or awnless; spikelets elliptic to oblong; rachilla internodes scabrous; *shorter branch of each pair of panicle branches bearing 3 or more spikelets;* panicles 10-50 cm. long; *basal sheaths tough, whitish to darkish, persistent;* leaf blades 3-12 (usually 4-6) mm. wide, usually stiffer and more heavily nerved than blades of *F. pratensis; auricles ciliolate at least on lower leaves or sometimes glabrous;* plants 45-180 cm. high, usually taller, more robust, and with thicker culms than *F. pratensis.* ..... *Festuca arundinacea* Schreb.

Festuca arundinacea (tall fescue) is currently much used in U. S. agriculture especially in the form of its cultivars 'Kentucky 31' and 'Alta'. Tall fescue is extensively sown to prevent erosion along new highways in the southeastern states, Middle Atlantic states, and parts of the Middle West. To some extent it is employed in the same regions also as a forage crop. In the Pacific Northwest it is primarily a seed crop, secondarily a forage crop. *Festuca pratensis* (meadow fescue) is very little used.

The U. S. National Herbarium has about 230 American specimens of *F. pratensis* (as *F. elatior*), many of which were collected more than 50 years ago. In contrast, there are only about 30 specimens of *F. arundinacea,* mostly collected since 1940. Both species occur in all sections of the United States and southern Canada. The scarcity of specimens of *F. arundinacea* is due partly to its having been used extensively in agriculture only in more recent years, and to the natural tendency of many collectors to ignore

roadside plants if they appear to have been planted or sown.

Field observations in the eastern states suggest that *Festuca arundinacea* is much more abundant than many current floras and herbarium specimens indicate. In Maryland and Virginia it is a common feature of the roadside flora and may occur in solid stands for many miles. In eastern North Carolina it was seen also along ditch banks. Smith (1965) found *F. pratensis* (as *F. elatior*) in 26 districts in New York State, *F. arundinacea* in 16 districts. Although the extent to which *F. arundinacea* establishes itself as a weed from seeds is yet uncertain, it must be considered an increasingly conspicuous part of our roadside flora.

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YELLOW-FRUITED CORNUS FLORIDA — CULTIVAR OR FORM?

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During the period from August, 1966 through November, 1967 a number of yellow-fruited[2] plants of *Cornus florida* L. were observed in Tennessee. On the basis of these observations, and reports received, it would seem that an adjustment in nomenclature (from *C. florida* cv. Xanthocarpa to *C. florida* forma *xanthocarpa* Rehd.) for this taxon may be warranted.

During October and November, 1967 five spontaneous plants of *Cornus florida* bearing yellow fruit were observed. One plant (No. 1, Table I) was located in Monroe County, one (No. 2) in Anderson County, and three (Nos. 4, 5, and 8) in Knox County. One plant (No. 7) which was grown from seed was obtained from Roane County, but the seed source (possibly Warren County) is unknown.

Occasional yellow fruits have been reported as being found in large amounts of fruit purchased by commercial nurserymen in Warren and Franklin Counties. This fruit reportedly is collected by local residents from spontaneous trees. These reports are from reliable sources but have not been personally verified. A report was received from a

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[2]2.5 Y 8/12, vivid yellow to 10 YR 8/10, moderate orange yellow (color notations are taken from the Nickerson Color Fan with Munsell hue color symbols).